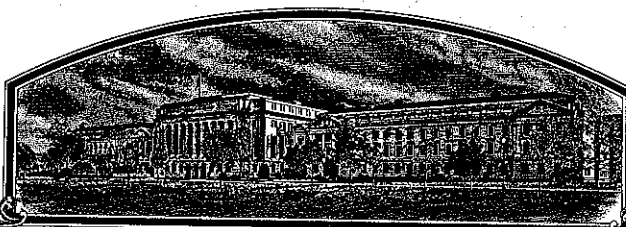


No.

9400009



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Ohio Agricultural Research and Development Center,
The Ohio State University Research Foundation
Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXHIBIT IT, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS SPECIFIED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

SOYBEAN

'Vertex'



In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this 31st day of October in the year of our Lord one thousand nine hundred and ninety-five.

Attest:

Martha A. Hunter

Commissioner

Plant Variety Protection Office
Agricultural Marketing Service

W. E. Feltman
Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE
(Instructions on reverse)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) (as it is to appear on the Certificate) Ohio Agricultural Research and Development Center, The Ohio State University <i>RESEARCH FOUNDATION</i>		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO. HS88-4905	3. VARIETY NAME Vertex
4. ADDRESS (street and no. or R.F.D. no., city, state, and ZIP) 1680 Madison Ave. Wooster, OH 44691		5. PHONE (include area code) (216) 263-3701	FOR OFFICIAL USE ONLY VPVO NUMBER 9400009
6. GENUS AND SPECIES NAME Glycine max.	7. FAMILY NAME (Botanical) Fabaceae (Leguminosae)		
8. CROP KIND NAME (Common Name) Soybean	9. DATE OF DETERMINATION Feb. 5, 1993	Filing and Examination Fee: \$ 2325.00 Date Oct. 12, 1993	
10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) State Agricultural Experiment Station		Filing and Examination Fee: \$ 275.00 Date August 8, 1995	
11. IF INCORPORATED, GIVE STATE OF INCORPORATION	12. DATE OF INCORPORATION		

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS
S. K. St. Martin
Dept. of Agronomy
Ohio State University
Kottman Hall, 2021 Coffey Rd., Columbus OH 43210

PHONE (include area code): (614) 292-8499

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow INSTRUCTIONS on reverse)

- a. ☒ Exhibit A, Origin and Breeding History of the Variety
b. ☒ Exhibit B, Novelty Statement.
c. ☒ Exhibit C, Objective Description of Variety.
d. ☐ Exhibit D, Additional Description of Variety.
e. ☒ Exhibit E, Statement of the Basis of Applicant's Ownership.
f. ☒ Seed Sample (2,500 viable untreated seeds). Date, Seed Sample mailed to Plant Variety Protection Office _____
g. ☒ Filing and Examination Fee (\$2,325) made payable to "Treasurer of the United States."

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See section 83(a) of the Plant Variety Protection Act.)

☒ YES (If "YES," answer items 16 and 17 below) ☐ NO (If "NO," skip to item 18 below)

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?

☐ YES ☒ NO

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?

☐ FOUNDATION ☐ REGISTERED ☐ CERTIFIED

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?

☐ YES (If "YES," through ☐ Plant Variety Protection Act ☐ Patent Act. Give date: _____)
☒ NO

19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?

☐ YES (If "YES," give names of countries and dates)
☒ NO

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT (Owner(s)) <i>Steven R. St. Martin</i>	CAPACITY OR TITLE Associate Professor (breeder)	DATE 9/15/93
SIGNATURE OF APPLICANT (Owner(s)) <i>Felda D. St. Martin</i>	CAPACITY OR TITLE Associate Executive Director	DATE 9/16/93

'Vertex' Exhibit A - Origin and Breeding History

Vertex was derived from the cross 'Conrad' x 'Hayes', which was made at Columbus, OH, in 1985. The F_1 plant was grown at Mayaguez, Puerto Rico during winter 1985-86. In summer 1986, F_2 plants were produced at Columbus and harvested individually. F_2 -derived lines were evaluated in 1.5-m long plots in Ohio in 1987. One such line, HS87-5028, was retained for generation advance and further testing.

Six F_4 plants from HS87-5028 were produced in the greenhouse at Columbus in winter 1987-88. One of the resulting F_4 -derived lines, designated HS88-4905, was planted for seed increase in 1988 at Columbus. Meanwhile, the progenitor line HS87-5028 was tested for yield and other agronomic traits at 3 Ohio locations in 1988 and again in 1989.

Line HS88-4905 was tested at three Ohio locations in 1989. It was tested regionally in Uniform Preliminary Test IIA in 1990 and in Uniform Test II in 1991-93. It was also entered in the Ohio Advanced Line Test and other Ohio tests in 1990-93. On February 5, 1993, the release of HS88-4905 under the name 'Vertex' was approved by the Crop Variety Release and Distribution Committee of the Ohio Agricultural Research and Development Center (OARDC). This action was subsequently approved by the Director of OARDC.

Purification and multiplication of Vertex were initiated by selection of typical individual plants in 1989. Progeny rows from these plants were produced at Columbus in 1990; rows were selected for uniformity and trueness to type. Each row was tested to make certain that it was uniform for response to phytophthora rot. The uniform rows were planted at South Charleston, OH, in 1991. This increase was inspected and rogued at flowering and several times near maturity. The increase was harvested in bulk and planted at Croton, OH, in 1992 to provide breeder seed. Field inspection was carried out at both flowering and maturity in 1992, and the breeder seed was examined by a registered seed analyst for purity. These steps assured that the variety conforms to acceptable standards of uniformity.

Stability of Vertex is indicated by consistent maturity, height, yield, seed size, pigment characteristics, disease reaction, and chemical composition relative to other cultivars in regional and Ohio tests.

'Vertex' Exhibit B - Statement of Novelty

Vertex has been compared extensively to other public cultivars and, among such cultivars, is unique in its combination of early maturity, lodging resistance, and resistance to phytophthora rot (Rps1k gene).

There are relatively few private cultivars of maturity group II that carry the Rps1k gene. Vertex can be distinguished from these by its combination of gray pubescence and buff hilum.

The brown pods of Vertex distinguish it from its sister line 'Sandusky', which has tan pods. Also, Vertex matures 4 days earlier than Sandusky.

PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MARYLAND 20705

OBJECTIVE DESCRIPTION OF VARIETY
SOYBEAN (*Glycine max* L.)

NAME OF APPLICANT(S) Ohio Agricultural Research and Development Center, The Ohio State University	TEMPORARY DESIGNATION HS88-4905	VARIETY NAME Vertex
ADDRESS (Street and No., or R.F.D. No., City, State, and Zip Code) 1680 Madison Ave. Wooster OH 44691		FOR OFFICIAL USE ONLY PVPO NUMBER 9400009

Choose the appropriate response which characterizes the variety in the features described below. When the number of significant digits in your answer is fewer than the number of boxes provided, place a zero in the first box when number is 9 or less (e.g.,). Starred characters ★ are considered fundamental to an adequate soybean variety description. Other characters should be described when information is available.

1. SEED SHAPE:



1 = Spherical (L/W, L/T, and T/W ratios = < 1.2)
3 = Elongate (L/T ratio > 1.2; T/W = < 1.2)

2 = Spherical Flattened (L/W ratio > 1.2; L/T ratio = < 1.2)
4 = Elongate Flattened (L/T ratio > 1.2; T/W > 1.2)

★ 2. SEED COAT COLOR: (Mature Seed)

1 = Yellow 2 = Green 3 = Brown 4 = Black 5 = Other (Specify) _____

3. SEED COAT LUSTER: (Mature Hand Shelled Seed)

1 = Dull ('Corsoy 79'; 'Braxton') 2 = Shiny ('Nebsoy'; 'Gasoy 17')

★ 4. SEED SIZE: (Mature Seed)

Grams per 100 seeds

★ 5. HILUM COLOR: (Mature Seed)

1 = Buff 2 = Yellow 3 = Brown 4 = Gray 5 = Imperfect Black 6 = Black 7 = Other (Specify) _____

★ 6. COTYLEDON COLOR: (Mature Seed)

1 = Yellow 2 = Green

★ 7. SEED PROTEIN PEROXIDASE ACTIVITY:

1 = Low 2 = High

★ 8. SEED PROTEIN ELECTROPHORETIC BAND:

1 = Type A (SP1^a) 2 = Type B (SP1^b)

★ 9. HYPOCOTYL COLOR:

1 = Green only ('Evans'; 'Davis') 2 = Green with bronze band below cotyledons ('Woodworth'; 'Tracy')
3 = Light Purple below cotyledons ('Beeson'; 'Pickett 71')
4 = Dark Purple extending to unifoliate leaves ('Hodgson'; 'Coker Hampton 266A')

★ 10. LEAFLET SHAPE:

1 = Lanceolate 2 = Oval 3 = Ovate 4 = Other (Specify) _____

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2

2 = Medium ('Corsoy 79'; 'Gasoy 17')

1

2 = Medium Green ('Corsoy 79'; 'Braxton')

2

3 = White with purple throat

2

3 = Black

1

2 = Brown (Tawny)

1

2 = Intermediate ('Amcor'; 'Braxton')

3

2 = Semi-Determinate ('Will') - - -

0	5
---	---

$$g = v$$

★ 0

★ 2

★ 0

★ 0

★ 0

0 Race 2

0 Race 3

0 Race 4

0 Race 5

☐ Other (Specify _____)

0.

0.

0

★ 1

0

☐ Other (Specify) _____

19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant) (Continued)

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FUNGAL DISEASES: (Continued)

- ★ ☐ 1 Pod and Stem Blight (*Diaporthe phaseolorum* var. *sojae*)
- ☐ 1 Purple Seed Stain (*Cercospora kikuchii*)
- ☐ 0 Rhizoctonia Root Rot (*Rhizoctonia solani*)
- Phytophthora Rot (*Phytophthora megasperma* var. *sojae*)
- ★ ☐ 2 Race 1 ☐ 2 Race 2 ☐ 2 Race 3 ☐ 2 Race 4 ☐ 2 Race 5 ☐ 2 Race 6 ☐ 2 Race 7
- ☐ 2 Race 8 ☐ 2 Race 9 ☐ 2 Other (Specify) 10, 11, 13, 14, 15, 17-24

VIRAL DISEASES:

- ☐ 0 Bud Blight (Tobacco Ringspot Virus)
- ☐ 0 Yellow Mosaic (Bean Yellow Mosaic Virus)
- ★ ☐ 0 Cowpea Mosaic (Cowpea Chlorotic Virus)
- ☐ 0 Pod Mottle (Bean Pod Mottle Virus)
- ★ ☐ 1 Seed Mottle (Soybean Mosaic Virus)

NEMATODE DISEASES:

- Soybean Cyst Nematode (*Heterodera glycines*)
- ★ ☐ 0 Race 1 ☐ 0 Race 2 ☐ 0 Race 3 ☐ 0 Race 4 ☐ Other (Specify) _____
- ☐ 0 Lance Nematode (*Hoplolaimus Colombus*)
- ★ ☐ 0 Southern Root Knot Nematode (*Meloidogyne incognita*)
- ★ ☐ 0 Northern Root Knot Nematode (*Meloidogyne Hapla*)
- ☐ 0 Peanut Root Knot Nematode (*Meloidogyne arenaria*)
- ☐ 0 Reniform Nematode (*Rotylenchulus reniformis*)
- ☐ OTHER DISEASE NOT ON FORM (Specify): _____

20. PHYSIOLOGICAL RESPONSES: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

- ★ ☐ 1 Iron Chlorosis on Calcareous Soil
- ☐ Other (Specify) Short hypocotyl at 25°C

21. INSECT REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

- ☐ 0 Mexican Bean Beetle (*Epilachna varivestis*)
- ☐ 2 Potato Leaf Hopper (*Empoasca fabae*)
- ☐ Other (Specify) _____

22. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED.

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant Shape		Seed Coat Luster	
Leaf Shape		Seed Size	
Leaf Color		Seed Shape	
Leaf Size		Seedling Pigmentation	

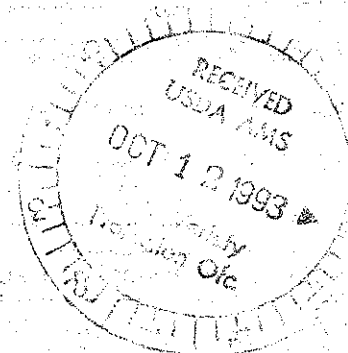
23. GIVE DATA FOR SUBMITTED AND SIMILAR STANDARD VARIETY: Paired Comparison Data

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VARIETY	NO. OF DAYS MATURITY	PLANT LODGING SCORE	CM PLANT HEIGHT	LEAFLET SIZE		SEED CONTENT		SEED SIZE G/100 SEEDS	NO. SEEDS/POD
				CM Width	CM Length	% Protein	% Oil		
Vertex Submitted	124	1.5	90			39.0	21.3	17.6	
Sturdy Name of Similar Variety	124	1.9	88			40.4	20.6	18.4	

PUBLICATIONS USEFUL AS REFERENCE AIDS FOR COMPLETING THIS FORM:

1. Caldwell, B.E., ed. 1973. Soybeans: Improvement, Production, and Uses. Amer. Soc. Agron. Monograph No. 16.
2. Buttery, B.R. and R.I. Buzzell. 1968. Peroxidase activity in seeds of soybean varieties. Crop Sci., 8: 722-725.
3. Hymowitz, T. 1973. Electrophoretic analysis of SBTI-A₂ in the USDA soybean germplasm collection. Crop Sci., 13: 420-421.
4. Payne, R.C. and L.F. Morris. 1976. Differentiation of soybean cultivars by seedling pigmentation patterns. J. Seed Technol. 1: 1-19.



'Vertex' Exhibit E - Basis of Applicant's Ownership

'Vertex' is owned by the Ohio Agricultural Research and Development Center, The Ohio State University (OARDC-OSU). The development of Vertex was carried out by employees of OARDC-OSU as part of their assigned duties. In cases where testing and seed increase were carried out by collaborating institutions, memoranda of understanding were in force which clearly indicated that ownership of the variety resided with OARDC-OSU.

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